9.10.1. Complications of Uveitis (I): Glaucoma

- introduction
  - IOP >24 mm Hg
    - increases the risk of glaucoma
  - IOP >30 mm Hg
    - most practitioners tend to treat even without evidence of glaucomatous optic nerve damage
  - early IOP elevation with active inflammation is almost always caused by inflammation
    - requires aggressive anti-inflammatory treatment
    - corticosteroid-induced ocular hypertension rarely occurs before 3 weeks
      - clinicians should resist the urge to prematurely taper corticosteroids because of a fear of corticosteroid-induced ocular hypertension
    - unilateral uveitis of sudden onset with open angles and increased IOP may be of infectious origin
- Acute secondary angle-closure glaucoma
  - choroidal inflammation
    - forward rotation of the ciliary body and lens–iris diaphragm
    - ± presenting sign of VKH syndrome or sympathetic ophthalmia
  - pain, elevated IOP, and no posterior synechiae
  - UBM or ultrasound evaluation
    - choroidal thickening and anterior rotation of the ciliary body
  - treatment
    - aggressive corticosteroid therapy
    - aqueous suppressants
    - cycloplegia
    - peripheral iridotomy or iridectomy is not useful !
- Subacute secondary angle-closure glaucoma
  - acute recurrent or chronic anterior segment inflammation
    - circumferential posterior synechiae
      - pupillary block (seclusion of the pupil)
  - treatment
    - peripheral laser iridotomy
      - multiple
      - large
      - exacerbation of inflammation after laser iridotomy
        - iridotomies prone to close
        - Intensive topical corticosteroid and cycloplegic therapy
      - in patients with brown irides, pretreat the iris with argon laser before using the Nd:YAG laser
        - may lessen the chance of bleeding and facilitate a wider opening
    - surgical iridectomy
      - If laser iridotomy is not successful
      - ± supplemented with goniosynechialysis
- Chronic secondary angle-closure glaucoma
  - chronic intraocular inflammation
    - peripheral anterior synechiae
  - treatment
    - topical aqueous suppressants may be inadequate
    - goniosynechialysis
    - trabeculectomy with mitomycin C
    - glaucoma drainage device
- Acute secondary open-angle glaucoma
  - pathogenesis
    - trabecular meshwork is inflamed (trabeculitis)
    - inflammatory debris clogs the angle
  - infectious causes of uveitis
    - toxoplasma retinochoroiditis
    - necrotizing herpetic retinitis
    - herpes simplex and varicella-zoster anterior uveitis
    - cytomegalovirus anterior uveitis (including the Posner-Schlossman type)
    - Fuchs heterochromic uveitis (rubella-associated)
  - sarcoid uveitis
  - treatment
    - specific treatment of the infectious agent
    - topical cycloplegics and corticosteroids
- Chronic secondary open-angle glaucoma
  - direct damage to the trabecular meshwork
  - management
    - similar to that of primary open-angle glaucoma
    - strict control of intraocular inflammation through the use of IMT
- Combined-mechanism uveitic glaucoma
  - multiple mechanisms may be responsible for elevated pressure in uveitic eyes
- Corticosteroid-Induced Ocular Hypertension and Glaucoma
  - corticosteroids in any formulation—topical, periocular, intraocular, or oral—may induce an elevation of IOP
  - fluocinolone intraocular implant
    - need for glaucoma surgery in ≈ 40%
  - topical difluprednate associated with severe and sometimes rapid increases in IOP
  - prevention
    - use of a less-potent topical corticosteroid preparation
      - fluorometholone
      - loteprednol
      - rimexolone
      - less likely to induce an IOP elevation
        - less effective in controlling intraocular inflammation
    - less-frequent administration schedule
- Management
  - aqueous suppressants
    - first-line agents
  - prostaglandin analogues
    - do not exacerbate intraocular inflammation
      - especially when used with IMT and corticosteroids
    - use with caution in eyes with herpetic uveitis
  - pilocarpine should be avoided in uveitis
    - the smaller fixed pupil may be at risk for worsening of posterior synechiae
    - causes breakdown of the blood–aqueous barrier
  - standard trabeculectomy
    - greater risk of failure
    - results may be improved by using mitomycin C with intensive topical corticosteroids
    - intense and recurrent inflammation can lead to failure of filtering surgery in uveitic eyes
    - ≤90% of patients 1 year after surgery and 62% 5 years after surgery achieve IOP control with 1 or 0 medications
    - surgical complications
      - cataract formation
      - bleb leakage (early and late)/ could lead to endophthalmitis
      - choroidal effusions
    - excised trabecular block and iris should be submitted for pathologic evaluation
  - nonpenetrating deep sclerectomy ± drainage implant
    - effective in controlling IOP in ≤90% of uveitic eyes x 1 year
  - goniotomy
    - pediatric uveitis patients
    - ≤75% chance of reducing IOP to 21 mm Hg or less after 2 surgeries
    - may be complicated by transient hyphema and worsening of the preexisting cataract
  - trabeculodialysis
  - laser sclerostomy
    - high rates of failure because of recurrent postoperative inflammation
  - viscocanalostomy
    - higher success rates in a limited number of studies
  - aqueous drainage devices
    - most cases of uveitic glaucoma, especially in pseudophakic or aphakic eyes
    - tunneled into the
      - anterior chamber
      - vitreous cavity (pars plana)
    - unidirectional valve design (valve implant)
      - can prevent postoperative hypotony
    - more likely than trabeculectomy to successfully control IOP in the long term in eyes with uveitic glaucoma
      - ≤75% reduction of IOP from preoperative levels
      - 75% of patients achieve target IOP levels with use of 0 or 1 topical antiglaucoma medication after 4 years
    - complications of glaucoma-drainage-device surgery
      - 10%/patient-year
      - early
        - shallow anterior chamber
        - hypotony
        - suprachoroidal hemorrhage
        - blockage of the drainage device by blood, fibrin, or iris
        - CME
      - long-term
        - device erosion through the conjunctiva
        - valve migration
        - drainage device–cornea touch
        - corneal decompensation
        - retinal detachment
  - cyclodestructive procedures
    - may worsen ocular inflammation
    - hypotony
    - phthisis
  - laser trabeculoplasty
    - generally considered ineffective in eyes with uveitis

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